

IN THE CLAIMS

Claims 1-18. Canceled

19. (Previously Presented) A method of storing data values in a multidimensional database comprising:
- identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations;
 - identifying a hierarchy of attributes within at least one of the dimensions, wherein the hierarchy is indicative of an association between the attributes;
 - attributing a plurality of data values to each of the attributes;
 - storing the data values on a storage medium based on the data values indicated by the hierarchy and stored on the storage medium in proximity to associated data values, wherein the associated data values are attributed to associated attributes as indicated by the hierarchy, the data values further comprising aggregate values and detail values;
 - aggregating at least one of the dimensions having a hierarchy by traversing each of the aggregate values included in the dimension; and
 - including, in an aggregation total, the associated data values corresponding to the aggregate value.
20. (Original) The method of Claim 19 wherein aggregating includes:
- traversing, for a first aggregate value on a first level, each of the data values on a second level associated with the aggregate value; and
 - subsequently traversing each of the other aggregate values on the first level via traversing the data values on a second level associated with the subsequent aggregate value.

21. (Original) The method of Claim 20 wherein traversing further includes fetching, from the storage medium, a storage segment having data values corresponding to the aggregate value, wherein each of the corresponding data values are stored in an adjacency.
22. (Original) The method of Claim 21 wherein the storage segment is a memory cache page.
23. (Original) The method of Claim 21 wherein the storage segment is a disk page.

Claims 24-36. Canceled

37. (Previously Presented) A computer data signal having program code for storing data values in a multidimensional database comprising:
 - program code for identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations;
 - program code for identifying a hierarchy of attributes within at least one of the dimensions, wherein the hierarchy is indicative of an association between the attributes;
 - program code for attributing a plurality of data values to each of the attributes;
 - program code for storing the data values on a storage medium in proximity to associated data values, wherein the associated data values are attributed to associated attributes as indicated by the hierarchy, the data values further including aggregate values and detail values;
 - program code for aggregating at least one of the dimensions having a hierarchy by traversing each of the aggregate values included in the dimension; and

program code for including, in an aggregation total, the associated data values corresponding to the aggregate value.

38. Canceled

39. (Previously Presented) A method of storing data values in a multidimensional database comprising:

identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of attributes associated with a data value;

identifying a hierarchy within at least one of the dimensions, wherein the hierarchy is indicative of an association between the plurality of attributes;

assigning a plurality of data values to each of the plurality of attributes;

storing the data values on a storage medium in proximity to associated data values, wherein the associated data values are assigned to associated attributes as indicated by the hierarchy, the data values further including aggregate values and detail values;

aggregating at least one of the dimensions having a hierarchy by traversing

each of the aggregate values included in the dimension; and

including, in an aggregation total, the associated data values corresponding to the aggregate value.

Claims 40-48. Canceled

49. (Previously Presented) The computer data signal of Claim 37 wherein the data values further comprise aggregate values and detail values

50. (Previously Presented) The computer data signal of Claim 49 wherein the association is a parent-child association between an aggregate value and at least one child data value.

51. (Previously Presented) The computer data signal of Claim 49 wherein the association is between an aggregate value and at least one data value.

Claims 52-54. Canceled

55. (Previously Presented) The method of Claim 39 wherein the data values further comprise aggregate values and detail values.

56. (Previously Presented) The method of Claim 55 wherein the association is a parent-child association between an aggregate value and at least one child data value.

57. (Previously Presented) The method of Claim 55 wherein the association is between an aggregate value and at least one data value.

58. (Previously Presented) The method of Claim 55 wherein each of the data values associated with an aggregate value are stored proximate to the other data values associated with the same aggregate value as indicated by the hierarchy.

59. (Previously Presented) The method of Claim 55 wherein storing further comprises storing the aggregate value on the storage medium adjacent to the associated data values.

60. (Previously Presented) The method of Claim 19 wherein associated values are retrievable by a single fetch.

61. (Previously Presented) The method of Claim 37 wherein associated values are retrievable by a single fetch.
62. (New) The method of Claim 19 further comprising storing related data values adjacent to corresponding sparse data values in a sparse matrix represented in the multidimensional database.
63. (New) The method of Claim 62 further comprising storing values adjacent to values corresponding to a common dimension of the multidimensional database.
64. (New) The method of claim 37 further comprising storing related data values adjacent to corresponding sparse data values in a sparse matrix represented in the multidimensional database.
65. (New) The method of claim 64 further comprising storing values adjacent to values corresponding to a common dimension of the multidimensional database.
66. (New) The method of claim 39 further comprising storing related data values adjacent to corresponding sparse data values in a sparse matrix represented in the multidimensional database.
67. (New) The method of claim 66 further comprising storing values adjacent to values corresponding to a common dimension of the multidimensional database.